Reply on RC2

Rafaello Bergonse et al.

We thank the reviewer for the feedback and comments provided.

Regarding the novelty of the work, the present manuscript is indeed one of the results of a larger study, which includes Bergonse et al. (2022). Both works share a common rationale in that they share the same spatial analysis units and study area, the same three fire regime descriptors, and the same biophysical drivers. However, they have different objectives and analysis techniques. In Bergonse et al. (2022), relations between the biophysical drivers and each of the three fire regime descriptors were separately analysed using ordinal regression equations. Although the study area was assumed to have a single fire regime, the spatial patterns shown by the three fire regime descriptors suggested the existence of distinct regimes.

The current work builds upon the previous results, in that we employ cluster analysis to explicitly identify and then characterize the different fire regimes within the study area, something which has not been done before. We subsequently apply a classification tree model to assess the capacity of the different biophysical drivers to discriminate between the four fire regimes defined. After interpreting the results, we then discuss the implications of the identified fire regimes and their drivers to wildfire management. This also is a completely novel outcome.

Being results of a common, ongoing research project, this manuscript and the previous article share a rationale and can certainly be considered complementary. Each of these works, however, presents distinct and novel results, which is why we feel this manuscript to the suitable for publication in this journal. We believe that the incremental findings presented are valuable and helpful to try understanding, progressively, the complexity of wildfires in Portugal.

We would also like to note that Oliveira and Zêzere (2020) was not a part of the research project mentioned above, having different study area, temporal scope, and analysis technique (random forest). It also employs as dependent variable only one of the three fire regime descriptors mentioned above. In fact, this paper has investigated the relation between the spatial distribution of burned area and different biophysical and social drivers for the parishes of the whole mainland Portugal, in a rather different scope than the one now presented.